



Docket No. 303.610US1
WD # 388236

Micron Ref. No. 98-1297

CLEAN VERSION OF PENDING CLAIMS

INSULATORS FOR HIGH DENSITY CIRCUITS

Applicant: Paul A. Farrar
Serial No.: 09/382,524

Claims 1-11, 42, 43, and 46-57, as of November 13, 2002 (Date of Response to First Office Action after CPA).

1. (Amended) A conductive system comprising:
a substrate;
a foamed material layer on the substrate, the foamed material layer having a surface that is hydrophobic; and
a plurality of conductive structures embedded in the foamed material layer.

- C 3.2. (Amended) A conductive system comprising:
a substrate;
a foamed material layer on the substrate, the foamed material layer having a surface that is hydrophobic; and
a plurality of conductive structures embedded in the foamed material layer, wherein the foamed material layer has a foamed thickness of between about .4 microns and about 3.4 microns.

- 6.3. (Amended) A conductive system comprising:
a substrate;
a foamed material layer on the substrate, the foamed material layer having a surface that is hydrophobic; and
a plurality of conductive structures embedded in the foamed material layer, wherein the foamed material layer has a dielectric constant of between about 1.2 and about 1.8.

²/₄ The conductive system of claim 1, wherein the foamed material layer is a foamed polymer layer.

⁹/₅ (Amended) A conductive system comprising:
a substrate;
a foamed material layer on the substrate, the foamed material layer having a surface that is hydrophobic; and
a plurality of conductive structures embedded in the foamed material layer, wherein the foamed material layer is a foamed aerogel layer.

¹²/₆ (Amended) A conductive system comprising:
a substrate;
a foamed material layer on the substrate, the foamed material layer having a surface that is hydrophobic and a cell size of less than about one micron; and
a plurality of conductive structures embedded in the foamed material layer.

¹⁵/₇ (Amended) A conductive system comprising:
a substrate;
a foamed material layer on the substrate, the foamed material layer having a surface that is hydrophobic and a cell size of less than about one micron; and
a plurality of conductive structures embedded in the foamed material layer, wherein the plurality of conductive structures embedded in the foamed material layer are conductive circuit lines.

¹³/₈ The conductive system of claim ¹²/₆, wherein the foamed material is a foamed polymer.

¹⁴/₉ The conductive system of claim ¹²/₆, wherein the foamed material is a foamed polyimide.

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(continued)

~~18.~~
~~10.~~ (Amended) A conductive system comprising:
a substrate;
a foamed material layer on the substrate, the foamed material layer having a surface that is hydrophobic and a cell size of less than about one micron; and
a plurality of conductive structures embedded in the foamed material layer, wherein the foamed material is a foamed polymer containing silane.

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~~21.~~
~~11.~~ (Amended) A conductive system comprising:
a substrate;
a foamed material layer on the substrate, the foamed material layer having a surface that is hydrophobic and a cell size of less than about one micron; and
a plurality of conductive structures embedded in the foamed material layer, wherein the cell size is less than about .1 micron.

~~24.~~
~~42.~~ (Amended) A conductive system comprising:
a substrate;
a foamed material layer on the substrate, the foamed material layer having a surface that is hydrophobic; and
a plurality of copper structures embedded in the foamed material layer.

~~25.~~
~~43.~~ (Amended) A conductive system comprising:
a substrate;
a foamed material layer on the substrate, the foamed material layer having a surface that is hydrophobic and a cell size of less than about one micron; and
a plurality of aluminum structures embedded in the foamed material layer.

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(continued)
- ~~46.~~⁴ (New) The conductive system of claim ~~2~~³, wherein the substrate comprises a semiconductor.
- ~~47.~~⁵ (New) The conductive system of claim ~~2~~³, wherein the substrate comprises a doped semiconductor.
- ~~48.~~⁷ (New) The conductive system of claim ~~3~~⁶, wherein the substrate comprises an undoped semiconductor.
- ~~49.~~⁸ (New) The conductive system of claim ~~3~~⁶, wherein the substrate comprises an epitaxial layer supported by a semiconductor.
- ~~50.~~¹⁰ (New) The conductive system of claim ~~3~~⁹, wherein the substrate comprises an epitaxial layer supported by an insulator.
- ~~51.~~¹¹ (New) The conductive system of claim ~~3~~⁹, wherein the substrate comprises silicon.
- ~~52.~~¹⁶ (New) The conductive system of claim ~~7~~¹⁵, wherein the substrate comprises germanium.
- ~~53.~~¹⁷ (New) The conductive system of claim ~~7~~¹⁵, wherein the substrate comprises gallium arsenide.
- ~~54.~~¹⁹ (New) The conductive system of claim ~~10~~¹⁸, wherein the substrate comprises silicon-on-insulator.
- ~~55.~~²⁰ (New) The conductive system of claim ~~10~~¹⁸, wherein the substrate comprises silicon-on-sapphire.

PENDING CLAIMS

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22.

56.

(New) The conductive system of claim ²¹~~11~~, wherein the substrate comprises germanium.

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57.

(New) The conductive system of claim ²¹~~11~~, wherein the substrate comprises gallium arsenide.

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Concluded